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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Daisuke Kaji

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EXAMINER

PERUNGAVOOR, SATHYANARAYA V

ART UNIT

PAPER NUMBER

2624

DATE MAILED: 07/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/024,045	Applicant(s) KAJI, DAISUKE	
	Examiner Sath V. Perungavoor	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-14,16-28,30-40,43-48,73,74 and 76-81 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3-14 and 16-26 is/are allowed.
- 6) ☒ Claim(s) 27,28,30-40,43-48,73,74 and 76-81 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant(s) Response to Official Action

- [1] The response filed on March 28, 2006 has been entered and made of record.

Response to Arguments/Amendments

- [2] Presented arguments have been fully considered, but are rendered moot.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

- [3] Claims 27, 28, 30-40, 43-48, 73, 74 and 76-81 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito et al. (hereinafter “Ito”) [US 5,991,457].

Regarding claim 27, Ito discloses all the claim limitations, as follows:

An image-processing apparatus, comprising: an unsharp image-signal generating section to generate unsharp image-signals from an original image-signal in respect to a plurality of frequency-bands [*Column 16 Equation 7: $S_{us1} \dots S_{usN}$ represent the unsharp image signals.*]; a differential processing section to generate differential image-signals from differences between said original image-signal and said unsharp image-signals, and to apply a conversion-processing to said differential image-signals so as to

generate converted differential image-signals [*Column 16 Equation 7: F_{usm} meets this limitation.*]; and an addition processing section to add said converted differential image-signals to said original image-signal or a lowest frequency image-signal to generate a processed image-signal [*Column 16 Equation 7: Disclosed invention involves adding to the original image.*]; wherein said conversion-processing varies depending on pixel values of said unsharp image-signals [*Column 16 Equation 7: F_{usm} is determined by pixel value of the unsharp image-signals.*].

Regarding claim 28, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 27, further comprising: a compensation-signal calculating section to generate a compensation-signal which is derived from a low-frequency component signal obtained by subtracting a total sum of said converted differential image-signals from said original image-signal [*Column 32 Equation 14*]; wherein said addition processing section adds said compensation-signal, instead of said converted differential image-signals, to said original image-signal or said lowest frequency image-signal to generate said processed image-signal [*Column 32 Equation 14: Disclosed invention involves adding to the original image.*].

Regarding claim 30, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 28, wherein said differential image-signals on which said conversion-processing depends are either anyone of image-signals utilized for obtaining said differential image-signals or both of them [*Column 16 Equation 7, Column 32 Equation 14: Disclosed invention involves both signals.*].

Regarding claim 31, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 28, wherein said conversion-processing applied to said differential image-signals varies depending on said differential image-signals [*Column 16 Equation 7, Column 32 Equation 14*].

Regarding claim 32, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 28, wherein said conversion-processing applied to said differential image-signals is a suppression-processing for suppressing an absolute pixel value at least at a part of image-signals [*Column 15 Lines 53-62*].

Regarding claim 33, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 32, wherein the lower a frequency-band in which said differential image-signals reside is, the stronger a power of suppressing said absolute pixel value of said image-signals in said suppression-processing is [*Column 21 Lines 32-37, Figure 27: Restriction (i.e. suppression) becomes higher as the frequency becomes lower frequency*].

Regarding claim 34, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 32, wherein the higher a frequency-band in which said differential image-signals reside is, the stronger a power of suppressing said absolute pixel value of said image-signals in said suppression-processing is

[Column 20 Lines 54-61, Figure 27: Restriction (i.e. suppression) becomes higher as the frequency becomes higher frequency].

Regarding claim 35, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 28, wherein a conversion-function is determined by designating a frequency characteristic, so as to realize a given frequency characteristic, and processing are conducted on the basis of said conversion-function *[Figure 27]*.

Regarding claim 36, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 35, wherein said frequency characteristic can be changed depending on density *[Column 15 Lines 42-49: Changes in density are inherently related to changes in frequency characteristics]*.

Regarding claim 37, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 35, wherein said frequency characteristic can be changed depending on density of either said original image-signal or said unsharp image-signals for every differential image-signal *[Column 15 Lines 42-49, Column 16 Equation 7, Column 32 Equation 14: Both are disclosed]*.

Regarding claim 38, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 35, wherein sets of parameters for processing said frequency characteristic are provided in said image-processing

apparatus, a kind of processing can be designated by selecting one set out of said sets of parameters *[Figure 27: Sets of curves (parameters) are provided and one set is chosen.]*.

Regarding claim 39, Ito discloses all the claim limitations, as follows:

An image-processing apparatus, comprising: a filter-processing section to apply a mask-processing to an original image-signal, representing a plurality of pixels, with a mask so as to generate filtered original image-signals *[Column 10 Lines 49-53]*; an unsharp image-signal generating section to generate unsharp image-signals from said filtered original image-signals *[Column 10 Lines 49-53: Low pass filtered signal is the unsharp image signal.]*; a differential processing section to generate differential image-signals from differences between said original image-signal and said unsharp image-signals, or from differences between said unsharp image-signals themselves *[Column 15 Equation 6: Disclosed invention involves generating differential image signals from unsharp image-signals.]*; and an addition processing section to add said differential image-signals to said original image-signal or a lowest frequency image-signal with respect to said original image-signal in order to generate a processed image-signal *[Column 15 Equation 6: Disclosed invention involves adding to the original image.]*; wherein a frequency characteristic of said processed image-signal can be varied by changing a frequency characteristic of said mask employed for said mask-processing *[Column 10 Equation 4]*, and wherein said mask-processing is repetitions of filter-processing with a simple average filter *[Column 10 Lines 49-53: Low pass filter is an average filter.]*.

Regarding claim 40, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 39, further comprising: a compensation-signal calculating section to generate a compensation-signal which is derived from a low-frequency component signal obtained by subtracting a total sum of said differential image-signals from said original image-signal [*Column 31 Equation 13*]; wherein said addition processing section adds said compensation-signal, instead of said differential image-signals, to said original image-signal or said lowest frequency image-signal to generate said processed image-signal [*Column 31 Equation 13: Disclosed invention involves adding to the original image.*].

Regarding claim 43, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 39, wherein said mask employed for said repetitions of filter-processing is a simple average of 2 pixels \times 2 pixels [*Column 10 Lines 49-53, Column 13 Lines 35-38: Low pass filter is an average filter.*].

Regarding claim 44, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 40, wherein a number of said repetitions of filter-processing designates said frequency characteristic of said processed image-signal [*Column 11 Lines 29-32*].

Regarding claim 45, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 40, wherein said frequency characteristic of said processed image-signal is specified by designating weight of said mask with variance values of a normal distribution, and a number of said repetitions of filter-

processing, which is approximate to said variance values of said normal distribution, is calculated to process image-signals [Column 11 Equation 5].

Regarding claim 46, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 40, wherein said mask-processing varies depending on said unsharp image-signals [10f-10i on Figure 13].

Regarding claim 47, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 40, wherein said mask-processing varies depending on said original image-signal [10e on Figure 13].

Regarding claim 48, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 40, wherein said mask-processing varies depending on a frequency characteristic of said original image-signal [10e on Figure 13].

Regarding claim 73, Ito discloses all the claim limitations, as follows:

An image-processing apparatus, comprising: an unsharp image-signal generating section to generate a plurality of unsharp image-signals from a original image-signal, representing a plurality of pixels [Column 15 Equation 6: $S_{u1} \dots S_{uN}$ represent the unsharp image signals.]; a differential processing section to generate differential image-signals from said unsharp image-signals or said original image-signal [Column 15 Equation 6]; and an addition processing section to add said differential image-signals to said

original image-signal or a lowest frequency image-signal with respect to said original image-signal in order to generate a processed image-signal [*Column 15 Equation 6: Disclosed invention involves adding to the original image.*]; wherein repetitions of filter-processing with a simple average filter are conducted for generating each of said unsharp image-signals [*Column 10 Lines 35-38, Column 10 Lines 49-53: Low pass filter is an average filter.*].

Regarding claim 74, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 73, further comprising: a compensation-signal calculating section to generate a compensation-signal which is derived from a low-frequency component signal obtained by subtracting a total sum of said differential image-signals from said original image-signal [*Column 31 Equation 13*]; wherein said addition processing section adds said compensation-signal, instead of said differential image-signals, to said original image-signal or said lowest frequency image-signal to generate said processed image-signal [*Column 31 Equation 13: Disclosed invention involves adding to the original image.*].

Regarding claim 76, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 73, wherein a mask employed for said repetitions of filter-processing is a simple average of 2 pixels \times 2 pixels [*Column 10 Lines 49-53, Column 13 Lines 35-38: Low pass filter is an average filter.*].

Regarding claim 77, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 73, wherein a mask-processing varies depending on said unsharp image-signals [10f-10i on Figure 13].

Regarding claim 78, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 73, wherein a mask-processing varies depending on said original image-signal [10e on Figure 13].

Regarding claim 79, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 73, wherein a mask-processing varies depending on a frequency characteristic of said original image-signal [10e on Figure 13].

Regarding claim 80, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 76, wherein a number of repetitions of said single average of 2 pixels \times 2 pixels is not less than 16 [Column 13 Line 35-38, Figure 13: Figure discloses at least four steps (i.e. $k=4$), this result in $2^4=16$ repetitions.].

Regarding claim 81, Ito discloses all the claim limitations, as follows:

The image-processing apparatus of claim 76, wherein a number of repetitions of said single average of 2 pixels \times 2 pixels is not less than 8 [Column 13 Line 35-38, Figure 13: Figure discloses at least four steps (i.e. $k=4$), this result in $2^4=16$ repetitions and $16 > 8$].

REASONS FOR ALLOWANCE

[4] In regards to claims 1 and 14, applicant uniquely claimed a distinct feature in the instant invention, which are not found in the prior art, either singularly or in combination. The feature is “differential image-signals obtained from differences between said **unsharp image-signals** and said **converted unsharp image-signals**”. This feature is not found or suggested in the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

[5] Claims 1, 3-14 and 16-26 are allowed.

Contact Information

[6] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Sath V. Perungavoor whose telephone number is (571) 272-7455. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

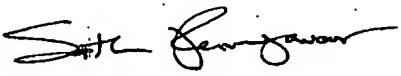
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Bhavesh M. Mehta whose telephone number is (571) 272-7453, can be reached on Monday to Friday from 9:00am to 5:00pm. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dated: July 9, 2006

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